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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,279	02/19/2004	Desmond Toh Onn Hii	6404P017	7610

8791 7590 06/14/2006

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EXAMINER

RAO, ANAND SHASHIKANT

ART UNIT PAPER NUMBER

2621

DATE MAILED: 06/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/783,279

Applicant(s)

HII, DESMOND TOH ONN

Examiner

Andy S. Rao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/20/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 29, 31-32, and 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claims 29 and 31 recites the limitation "stitching" in lines 1 of each claim. There is insufficient antecedent basis for this limitation in the claims, as "stitching" is not recited as in any of the steps of parent claim 28. Correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 1-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ritchey in view of Moezzi et al., (hereinafter referred to as “Moezzi”).

Ritchey discloses a method for providing a combined image from a plurality of images each produced by one of a plurality of cameras each having an image system for taking an image of the plurality of images (Ritchey: column 2, lines 10-15), the method comprising: (a) generating the plurality of images in each of the plurality of cameras (Ritchey: column 9, lines 1-45); (b) and combining the plurality of images to form the combined image using a virtual camera (Ritchey: column 22, lines 40-65; column 24, lines 40-65; column 26, lines 40-67; column 27, lines 1-5), as in claim 1. However, even though Ritchey discloses a distortion addition process for producing the combined image (Ritchey: column 22, lines 50-65), the reference fails to disclose using a stitching process as in the claim. Moezzi discloses using a stitching process (Moezzi: column 34, lines 15-55) for combining multiple images to produce a resultant virtual view image through warping (Moezzi: column 19, lines 10-55) in order to provide a realistic virtual camera viewpoint to a user (Moezzi: column 39, lines 35-65; column 40, lines 1-45). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art incorporate the stitching process of Moezzi into the Ritchey method, to execute Ritchey’s disclosed distortion addition process in order to have the combined method provide a realistic virtual camera view point to a user. The Ritchey method, now incorporating the Moezzi stitching process, has all of the features of claim 1.

Regarding claim 2, the Ritchey method, now incorporating the Moezzi stitching process, has wherein the stitching is by warping each of the plurality of images into an intermediate

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coordinate, and stitching the plurality of images into the combined image using a two dimensional search (Moezzi: column 19, lines 10-35), as in the claim.

Regarding claim 3, the Ritchey method, now incorporating the Moezzi stitching process, has determining overlap calculations to determine overlap regions of the plurality of images, the overlap calculation being used for all subsequent pluralities of images from the plurality of cameras (Moezzi: column 29, lines 45-67; column 30, lines 1-65), as in the claim.

Regarding claims 4-5, the Ritchey method, now incorporating the Moezzi stitching process, has comprising selecting a presentation style for the combined image (Ritchey: column 29, lines 30-63), as in the claims.

Regarding claims 6-7, the Ritchey method, now incorporating the Moezzi stitching process, has wherein stitching is by warping each of the plurality of images into an intermediate co-ordinate, and stitching the plurality of images into the combined image using a two dimensional search (Moezzi: column 19, lines 10-35), as in the claims.

Ritchey discloses a method for providing a combined image from a plurality of images each produced by one of a plurality of cameras each having an image system for taking an image of the plurality of images (Ritchey: column 2, lines 10-15), the method comprising: (a) generating the plurality of images in each of the plurality of cameras (Ritchey: column 9, lines 1-45); (b) and using a virtual camera to perform an operation on the plurality of images to form the combined (Ritchey: column 22, lines 40-65; column 24, lines 40-65; column 26, lines 40-67; column 27, lines 1-5), as in claim 8. However, even though Ritchey discloses a distortion addition process for producing the combined image (Ritchey: column 22, lines 50-65), the reference fails to disclose using a stitching process as in the claim. Moezzi discloses using a

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stitching process (Moezzi: column 34, lines 15-55) for combining multiple images to produce a resultant virtual view image through warping (Moezzi: column 19, lines 10-55) in order to provide a realistic virtual camera viewpoint to a user (Moezzi: column 39, lines 35-65; column 40, lines 1-45). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art incorporate the stitching process of Moezzi into the Ritchey method, to execute Ritchey's disclosed distortion addition process in order to have the combined method provide a realistic virtual camera view point to a user. The Ritchey method, now incorporating the Moezzi stitching process, has all of the features of claim 8.

Regarding claim 9, the Ritchey method, now incorporating the Moezzi stitching process, has wherein the stitching is by warping each of the plurality of images into an intermediate coordinate, and stitching the plurality of images into the combined image using a two dimensional search (Moezzi: column 19, lines 10-35), as in the claim.

Regarding claims 10-11, the Ritchey method, now incorporating the Moezzi stitching process, has determining overlap calculations to determine overlap regions of the plurality of images, the overlap calculation being used for all subsequent pluralities of images from the plurality of cameras (Moezzi: column 29, lines 45-67; column 30, lines 1-65), as in the claims.

Regarding claims 12-13, the Ritchey method, now incorporating the Moezzi stitching process, has comprising selecting a presentation style for the combined image (Ritchey: column 29, lines 30-63), as in the claims.

Regarding claims 14-15, the Ritchey method, now incorporating the Moezzi stitching process, has wherein stitching is by warping each of the plurality of images into an intermediate

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co-ordinate, and stitching the plurality of images into the combined image using a two dimensional search (Moezzi: column 19, lines 10-35), as in the claims.

Ritchey discloses a method for providing a combined image from a plurality of images each produced by one of a plurality of cameras each having an image system for taking an image of the plurality of images (Ritchey: column 2, lines 10-15), the method comprising: (a) generating the plurality of images in each of the plurality of cameras (Ritchey: column 9, lines 1-45); (b) distorting each of plurality of images into an intermediate coordinate (Ritchey: column 22, lines 50-65) (c) and combining the plurality of images to form the combined image using a virtual camera (Ritchey: column 22, lines 40-50; column 24, lines 40-65; column 26, lines 40-67; column 27, lines 1-5), as in claim 16. However, even though Ritchey discloses a distortion addition process for producing the combined image (Ritchey: column 22, lines 50-65), the reference fails to disclose using a stitching process after warping each of the images as in the claim. Moezzi discloses using a stitching process (Moezzi: column 34, lines 15-55) for combining multiple images to produce a resultant virtual view image through warping (Moezzi: column 19, lines 10-55) in order to provide a realistic virtual camera viewpoint to a user (Moezzi: column 39, lines 35-65; column 40, lines 1-45). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art incorporate the stitching process of Moezzi into the Ritchey method, to execute Ritchey's disclosed distortion addition process in order to have the combined method provide a realistic virtual camera view point to a user. The Ritchey method, now incorporating the Moezzi stitching process of warped images, has all of the features of claim 16.

Regarding claim 17, the Ritchey method, now incorporating the Moezzi stitching process of warped images, has determining overlap calculations to determine overlap regions of the plurality of images, the overlap calculation being used for all subsequent pluralities of images from the plurality of cameras (Moezzi: column 29, lines 45-67; column 30, lines 1-65), as in the claim.

Regarding claim 18, the Ritchey method, now incorporating the Moezzi stitching process of warped images, has comprising selecting a presentation style for the combined image (Ritchey: column 29, lines 30-63), as in the claim.

Ritchey discloses a method for providing a combined image from a plurality of images each produced by one of a plurality of cameras each having an image system for taking an image of the plurality of images (Ritchey: column 2, lines 10-15), the method comprising: (a) generating the plurality of images in each of the plurality of cameras (Ritchey: column 9, lines 1-45); (c) combining the plurality of images to form the combined image using a virtual camera (Ritchey: column 22, lines 40-50; column 24, lines 40-65; column 26, lines 40-67; column 27, lines 1-5); using the results for all subsequent pluralities of images from the plurality of cameras (Ritchey: column 30, lines 30-52), as in claim 19. However, even though Ritchey discloses a distortion addition process for producing the combined image (Ritchey: column 22, lines 50-65), the reference fails to disclose using a stitching process after overlap calculation images as in the claim. Moezzi discloses using a stitching process (Moezzi: column 34, lines 15-55) for combining multiple images after overlap calculations (Moezzi: column 29, lines 50-67; column 30, lines 1-65) in order to provide a realistic virtual camera viewpoint to a user (Moezzi: column 39, lines 35-65; column 40, lines 1-45). Accordingly, given this teaching it would have been

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obvious for one of ordinary skill in the art incorporate the stitching process after overlap calculation of Moezzi into the Ritchey method, to execute Ritchey's disclosed distortion addition process in order to have the combined method provide a realistic virtual camera view point to a user. The Ritchey method, now incorporating the Moezzi stitching process after overlap calculations, has all of the features of claim 19.

Regarding claim 20, the Ritchey method, now incorporating the Moezzi stitching process after overlap calculations, has wherein the stitching is by warping each of the plurality of images into an intermediate coordinate, and stitching the plurality of images into the combined image using a two dimensional search (Moezzi: column 19, lines 10-35), as in the claim.

Regarding claim 21, the Ritchey method, now incorporating the Moezzi stitching process after overlap calculations, has comprising selecting a presentation style for the combined image (Ritchey: column 29, lines 30-63), as in the claim.

Ritchey discloses a method for providing a combined image from a plurality of images each produced by one of a plurality of cameras each having an image system for taking an image of the plurality of images (Ritchey: column 2, lines 10-15), the method comprising: (a) generating the plurality of images in each of the plurality of cameras (Ritchey: column 9, lines 1-45); (b) selecting a presentation style for the combined image (Ritchey: column 29, lines 30-63); and combining the plurality of images to form the combined image in the presentation style, the combiner being disguised as a virtual camera (Ritchey: column 22, lines 40-65; column 24, lines 40-65; column 26, lines 40-67; column 27, lines 1-5), as in claim 22. However, even though Ritchey discloses a distortion addition process for producing the combined image (Ritchey: column 22, lines 50-65), the reference fails to disclose using a stitching process as in the claim.

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Moezzi discloses using a stitching process (Moezzi: column 34, lines 15-55) for combining multiple images to produce a resultant virtual view image through warping (Moezzi: column 19, lines 10-55) in order to provide a realistic virtual camera viewpoint to a user (Moezzi: column 39, lines 35-65; column 40, lines 1-45). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art incorporate the stitching process of Moezzi into the Ritchey method, to execute Ritchey's disclosed distortion addition process in order to have the combined method provide a realistic virtual camera view point to a user. The Ritchey method, now incorporating the Moezzi stitching process, has all of the features of claim 22.

Regarding claim 23, the Ritchey method, now incorporating the Moezzi stitching process, has wherein the stitching is by warping each of the plurality of images into an intermediate coordinate, and stitching the plurality of images into the combined image using a two dimensional search (Moezzi: column 19, lines 10-35), as in the claim.

Regarding claim 24, the Ritchey method, now incorporating the Moezzi stitching process, has determining overlap calculations to determine overlap regions of the plurality of images, the overlap calculation being used for all subsequent pluralities of images from the plurality of cameras (Moezzi: column 29, lines 45-67; column 30, lines 1-65), as in the claim.

Ritchey discloses a method for providing a combined image from a plurality of images each produced by one of a plurality of cameras each having an image system for taking an image of the plurality of images (Ritchey: column 2, lines 10-15), the method comprising: (a) distorting each of plurality of video images into an intermediate coordinate (Ritchey: column 22, lines 50-65); (b) selecting a presentation style for combined image (Ritchey: column 29, lines 30-67); (c) combining the plurality of images to form the combined image in the presentation style,

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combining by a combiner disguised as a virtual camera (Ritchey: column 22, lines 40-50; column 24, lines 40-65; column 26, lines 40-67; column 27, lines 1-5); and processing the combined video for display and/or storage (Ritchey: column 20, lines 45-65), as in claim 25. However, even though Ritchey discloses a distortion addition process for producing the combined image (Ritchey: column 22, lines 50-65), the reference fails to disclose using a stitching process after overlap calculation images as in the claim. Moezzi discloses using a stitching process (Moezzi: column 34, lines 15-55) for combining multiple images after overlap calculations (Moezzi: column 29, lines 50-67; column 30, lines 1-65) in order to provide a realistic virtual camera viewpoint to a user (Moezzi: column 39, lines 35-65; column 40, lines 1-45). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art incorporate the stitching process after overlap calculation of Moezzi into the Ritchey method, to execute Ritchey's disclosed distortion addition process in order to have the combined method provide a realistic virtual camera view point to a user. The Ritchey method, now incorporating the Moezzi stitching process after overlap calculations, has all of the features of claim 25.

Regarding claim 26, the Ritchey method, now incorporating the Moezzi stitching process after overlap calculations, has the overlap calculations being used for all subsequent pluralities of images from the plurality of cameras (Moezzi: column 29, lines 45-67; column 30, lines 1-65), as in the claim.

Regarding claim 27, the Ritchey method, now incorporating the Moezzi stitching process after overlap calculations, has comprising selecting a presentation style for the combined image (Ritchey: column 29, lines 30-63), as in the claim.

Ritchey discloses a method for providing a combined image from a plurality of images each produced by one of a plurality of cameras each having an image system for taking an image of the plurality of images (Ritchey: column 2, lines 10-15), the method comprising: (a) generating the plurality of images in each of the plurality of cameras (Ritchey: column 9, lines 1-45); (c) performing color correction in the plurality of images (Ritchey: column 21, lines 5-10); and performing substantially the same color correction for all subsequent pluralities of images from the plurality of cameras (Ritchey: column 30, lines 30-52), as in claim 29. However, the reference fails to disclose using an overlap calculation images as in the claim. Moezzi discloses combining multiple images after overlap calculations (Moezzi: column 29, lines 50-67; column 30, lines 1-65) in order to provide a realistic virtual camera viewpoint to a user (Moezzi: column 39, lines 35-65; column 40, lines 1-45). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art incorporate the overlap calculations of Moezzi into the Ritchey method, in order to have the combined method provide a realistic virtual camera viewpoint to a user. The Ritchey method, now incorporating the Moezzi overlap calculations, has all of the features of claim 28.

Regarding claim 29, the Ritchey method, now incorporating the Moezzi overlap calculations, has wherein the stitching is by warping each of the plurality of images into an intermediate coordinate, and stitching the plurality of images into the combined image using a two dimensional search (Moezzi: column 19, lines 10-35), as in the claim.

Regarding claim 3, the Ritchey method, now incorporating the Moezzi overlap calculation, has determining overlap calculations to determine overlap regions of the plurality of

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images, the overlap calculation being used for all subsequent pluralities of images from the plurality of cameras (Moezzi: column 29, lines 45-67; column 30, lines 1-65), as in the claim.

Regarding claims 30, 32-33, the Ritchey method, now incorporating the Moezzi overlap calculation, has comprising selecting a presentation style for the combined image (Ritchey: column 29, lines 30-63), as in the claims.

Regarding claims 31 and 34, the Ritchey method, now incorporating the Moezzi overlap calculation, that the stitcher is a virtual camera (Ritchey: column 22, lines 40-50; column 24, lines 40-65; column 26, lines 40-67; column 27, lines 1-5), as in the claims.

Ritchey discloses an apparatus for producing a combined image (Ritchey: figure 1), comprising: a plurality of cameras each having an image system (Ritchey: column 9, lines 1-45); (b) a combiner for performing an operation on a plurality of images, each of the plurality of images being produced by one of the plurality of cameras, to produce the combined image (Ritchey: column 22, lines 40-65; column 24, lines 40-65; column 26, lines 40-67; column 27, lines 1-5), the combiner being disguised as a virtual camera (Ritchey: column 22, lines 50-65), as in claim 35. However, even though Ritchey discloses a distortion addition process for producing the combined image (Ritchey: column 22, lines 50-65), the reference fails to disclose using a stitching process as in the claim. Moezzi discloses using a stitcher (Moezzi: column 34, lines 15-55) for combining multiple images to produce a resultant virtual view image through warping (Moezzi: column 19, lines 10-55) in order to provide a realistic virtual camera viewpoint to a user (Moezzi: column 39, lines 35-65; column 40, lines 1-45). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art incorporate the stitcher of Moezzi into the Ritchey apparatus, to execute Ritchey's disclosed distortion addition process in order to

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have the combined method provide a realistic virtual camera view point to a user. The Ritchey apparatus, now incorporating the Moezzi stitcher, has all of the features of claim 35.

Regarding claim 36, the Ritchey apparatus, now incorporating the Moezzi stitcher, has wherein each camera includes a buffer (Ritchey: column 16, lines 25-65), as in the claim.

Regarding claim 37, the Ritchey apparatus, now incorporating the Moezzi stitcher, has wherein the plurality of cameras in a common body (Ritchey: figure 2), as in the claim

Regarding claim 38, the Ritchey apparatus, now incorporating the Moezzi stitcher, has wherein each of the plurality of cameras is in a separate body (Ritchey: column 10, lines 30-45), as in the claim.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Florent discloses an image processing system compressing fixed cameras an a system simulating a mobile camera. McCutchen discloses a method and apparatus for a dodecahedral imaging system. Lelong discloses an image processing method and system for constructing an image from adjacent images.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy S. Rao whose telephone number is (571)-272-7337. The examiner can normally be reached on Monday-Friday 8 hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Andy S. Rao
Primary Examiner
Art Unit 2621

asr
June 9, 2006

ANDY RAO
PRIMARY EXAMINER

